

## Problem Set

1. Does the equation  $t^{\circ}\text{C} = (32 + 1.8t)^{\circ}\text{F}$  work for any rational number  $t$ ? Check that it does with  $t = 8\frac{2}{3}$  and  $t = -8\frac{2}{3}$ .
2. Knowing that  $t^{\circ}\text{C} = \left(32 + \frac{9}{5}t\right)^{\circ}\text{F}$  for any rational  $t$ , show that for any rational number  $d$ ,  $d^{\circ}\text{F} = \left(\frac{5}{9}(d - 32)\right)^{\circ}\text{C}$ .
3. Drake was trying to write an equation to help him predict the cost of his monthly phone bill. He is charged \$35 just for having a phone, and his only additional expense comes from the number of texts that he sends. He is charged \$0.05 for each text. Help Drake out by completing parts (a)–(f).
  - a. How much was his phone bill in July when he sent 750 texts?
  - b. How much was his phone bill in August when he sent 823 texts?
  - c. How much was his phone bill in September when he sent 579 texts?
  - d. Let  $y$  represent the total cost of Drake's phone bill. Write an equation that represents the total cost of his phone bill in October if he sends  $t$  texts.
  - e. Another phone plan charges \$20 for having a phone and \$0.10 per text. Let  $y$  represent the total cost of the phone bill for sending  $t$  texts. Write an equation to represent his total bill.
  - f. Write your equations in parts (d) and (e) as a system of linear equations, and solve. Interpret the meaning of the solution in terms of the phone bill.